



Internal Use Only

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PLASMA TV SERVICE MANUAL

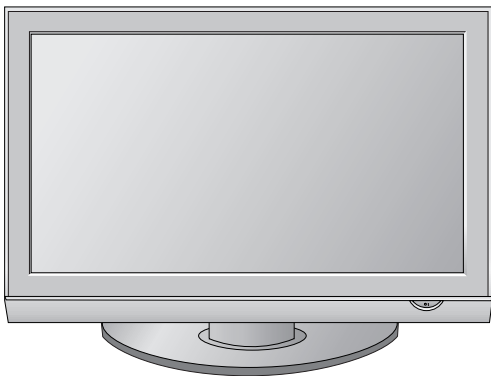
CHASSIS : PP81B

MODEL : 50PG100R

50PG100R-ZA

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle in the Schematic Diagram and Replacement Parts List.

It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.

Do not modify the original design without permission of manufacturer.

General Guidance

An **isolation Transformer should always be used** during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and its components from being damaged by accidental shorts of the circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this monitor is blown, replace it with the specified.

When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Due to high vacuum and large surface area of picture tube, extreme care should be used in **handling the Picture Tube**. Do not lift the Picture tube by its Neck.

Leakage Current Cold Check(Antenna Cold Check)

With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on position, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.

If the exposed metallic part has a return path to the chassis, the measured resistance should be between $1M\Omega$ and $5.2M\Omega$.

When the exposed metal has no return path to the chassis the reading must be infinite.

An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)

Plug the AC cord directly into the AC outlet.

Do not use a line Isolation Transformer during this check.

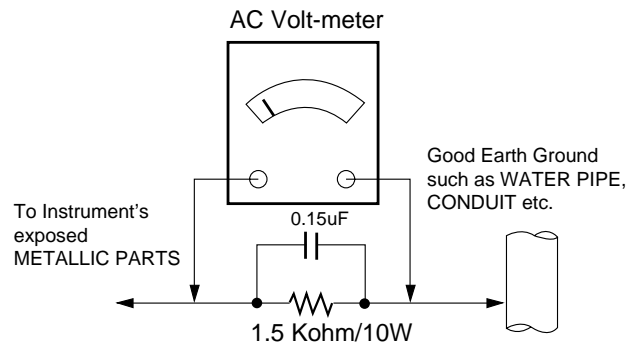
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.

Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each exposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which corresponds to 0.5mA.

In case any measurement is out of the limits specified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



SPECIFICATIONS

NOTE : Specifications and others are subject to change without notice for improvement.

√ Application Range

This spec is applied to the 42" PLASMA TV used PP81B Chassis.

Chassis	Model Name	Market	Brand	Remark
PP81B	42PG100R-ZA 50PG100R-ZA	EU	LG	

√ Specification

Each part is tested as below without special appointment.

- 1) Temperature : 25±5°C (77±9°F), CST : 40±5
- 2) Relative Humidity: 65±10%
- 3) Power Voltage: Standard Input voltage (100-240V~, 50/60Hz)
* Standard Voltage of each product is marked by models.
- 4) Specification and performance of each parts are followed each drawing and specification by part number in accordance with SBOM.
- 5) The receiver must be operated for about 20 minutes prior to the adjustment.

√ Test Method

- 1) Performance : LGE TV test method followed.
- 2) Demanded other specification
Safety : CE, IEC specification
EMC : CE, IEC

Model	Market	Appliance	Remark
42PG100R-ZA	EU	Safety : IEC/EN60065, EMI : EN55013 EMS : EN55020	TEST

√ General Specification (42" XGA Module)

No	Item	Specification	Remark
1	Display Screen Device	42" Wide Color Display Module	Plasma Display Panel
2	Aspect Ratio	16:9	
3	PDP Module	PDP42PG1, RGB Closed Type	Glass Filter
4	Operating Environment	1)Temp. : 0~60deg 2)Humidity : 20~80%	LGE SPEC.
5	Storage Environment	3)Temp. : -20~60deg 4)Humidity : 10~90%	
6	Input Voltage	100-240V~, 50/60Hz	Maker : LGIT, Samsung

▼ **Model Specification**

No	Item	Specification		Remark
1	Market	EU		
2	Broadcasting system	PAL-BG/I/DK, SECAM		
3	Available Channel	BAND	PAL	
		VHF/UHF	C1~C69	
		CATV	S1~S47	
4	Receiving system	Upper Heterodyne		
5	SCART Input(2EA)	PAL		Full Scart 1EA, Harf 1EA
6	Video Input (1EA)	PAL		Side AV
7	S-Video Input (1EA)	PAL		Side AV : S-Video Priority
8	Component Input (1EA)	Y/Cb/Cr, Y/Pb/Pr		
9	RGB Input(1EA)	RGB-PC		
10	HDMIInput(2EA)	HDMI-DTV		REAR HDMI(2)
11	Audio Input (5EA)	PC Audio, AV (3EA), SIDE AV(1EA)		L/R Input(PC 1EA, Component 2EA, Rear 1EA, Side 1EA)

ADJUSTMENT INSTRUCTION

1. Application Range

This spec. sheet is applied to all of the PP81B Chassis.

2. Specification

- (1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test instrument.
- (2) Adjustment must be done in the correct order.
- (3) The adjustment must be performed in the circumstance of $25 \pm 5^\circ\text{C}$ of temperature and $65 \pm 10\%$ of relative humidity if there is no specific designation.
- (4) The input voltage of the receiver must keep 100~240V, 50/60Hz.
- (5) Before adjustment, execute Heat-Run for 30 minutes at RF no signal.

3. ADC calibration

ADC	Component	RGB
MSPG925FA	Model : 216 (720P@60Hz)	Model : 60 (1024x768@60Hz)

3-1. PC input ADC

(1) Auto RGB Gain/Offset Adjustment

- 1) Convert to PC in Input-source
- 2) Signal equipment displays
Output Voltage : 700 mVp-p
Impress Resolution XGA (1024 x 768 @ 60Hz)
Model : 60 in Pattern Generator
(1024x768@60Hz Black and White Pattern)
Pattern : 54 in Pattern Generator (MSPG-925 SERISE)
[1/2 Black & White Pattern (Refer below picture)].



<Fig. 1>

- 3) Adjust by commanding AUTO_COLOR_ADJUST(0xF1) 0x00 0x02 instruction.

(2) Confirmation

- 1) We confirm whether "0xF1 (offset), 0xF2 (gain)" address of EEPROM "0xBC" is "0xAA" or not.
- 2) If "0xF1", "0xF2" address of EEPROM "0xBC" isn't "0xAA", we adjust once more
- 3) We can confirm the ADC values from "0x00~0x05" addresses in a page "0xBC"

[Manual ADC process using Service Remocon. After enter Service Mode by pushing "ADJ" key, execute "ADC Adjust" by pushing "G" key at "Adjust-RGB".

3-2. COMPONENT input ADC

(1) Component Gain/Offset Adjustment

- 1) Convert to Component in Input-source
- 2) Signal equipment displays
Impress Resolution 720P
MODEL : 217 in Pattern Generator
(720P/60Hz 100% Color Bar Mode)
PATTERN : 65 in Pattern Generator(MSPG-925 SERISE)



Adjustment pattern (COMPONENT)

- 3) Adjust by commanding AUTO_COLOR_ADJUST(0xF1) 0x00 0x02 instruction

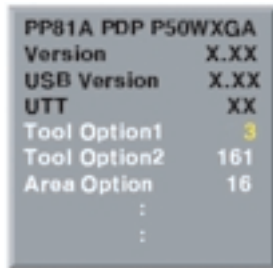
(2) Confirmation

- 1) We confirm whether "0xF3 (offset), 0xF4 (gain)" address of EEPROM "0xBC" is "0xAA" or not.
- 2) If "0xF3", "0xF4" address of EEPROM "0xBC" isn't "0xAA", we adjust once more.
- 3) We can confirm the ADC values from "0x06~0x0B" addresses in a page "0xBC"

4. PCB Assembly Adjustment Items

4-1. Option Adjustment Following BOM

Tool Option1
Tool Option2
Area Option



<Fig. 2>

* Profile: Must be changed the option value because being different with some setting value depend on module, inch and market

* Equipment : Adjustment Remote Controller

- (1) Push the IN-START key in the Adjust R/C.
- (2) Input the Option Number that was specified in the BOM, into the Shipping area.
- (3) Select "Tool Option1/ Tool Option2/ Area Option" by using D/E (CH+/-) key, and press the number key(0~9) consecutively
ex) If the value of Tool Option1 is 7, input the data using number key "7" (Fig. 2)

Caution: Don't Push "IN-STOP" key after PCB assembly adjustment.

- (4) Adjustment method
Before PCBA check, have to change the Tool option and Area option

[About PDP

After done all adjustments, Press IN-START button and compare Tool option and Area option value with its BOM, if it is correctly same then Change "RF mode" and then unplug the AC cable.

If it is not same, then correct it same with BOM and unplug AC cable.

For correct it to the model's module from factory JIG model.

- #### [Don't push The IN-STOP KEY after completing the function inspection.

5. S/W Program Download

5-1. Profile

This is for downloading the s/w to the flash memory of the IC803

5-2. Equipment

- (1) PC
- (2) ISP_tool program
- (3) Download jig

5-3. Connection Structure



5-4. Connection Condition

- (1) IC name and circuit number : Flash Memory and IC803
- (2) Use voltage : 3.3V (5 pin)
- (3) SCL : 15 pin
- (4) SDA : 12 pin
- (5) Tact time : about 2min and 30seconds

6. Download Method (PCB Ass'y)

6-1. Preliminary Steps



- (1) Connect the download jig to D-sub jack



- (2) Connect the PC to USB jack

6-2. Download Steps

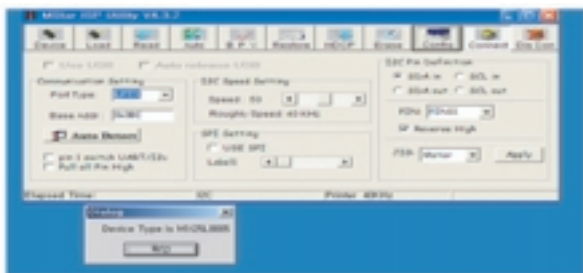
- (1) Execute 'ISP Tool' program in PC, then a main window will be opened



- (2) Click the connect button and confirm "Dialog Box".



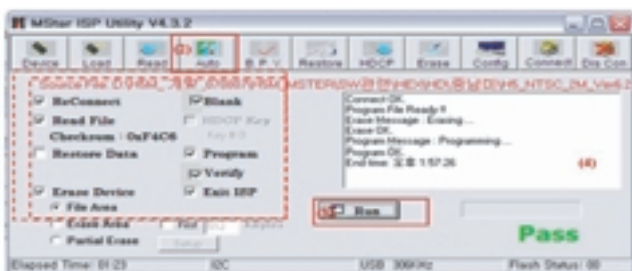
- (3) Click the Config button and Change speed E2PROM Device setting : over the 350Khz



- (4) Read and write bin file
Click "(1)Read" tab, and then load download file(XXXX.bin) by clicking "Read".



- (5) Click "Auto(2)" tab and set as below
- (6) Click "Run(3)".
- (7) After downloading, check "OK(4)" message.



7. EDID(The Extended Display Identification Data) / DDC (Display Data Channel) Download

[Caution

- Use the proper signal cable for EDID Download
- Never connect HDMI & D-SUB Cable at the same time.
- Use the proper cables below for EDID Writing

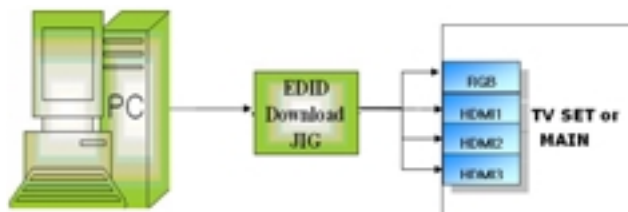
7-1. Profile: To be possible for plug and play

7-2. Equipment

- (1) Adjusting PC with S/W for writing EDID Data.(S/W: EDID TESTER Ver.2.5)
- (2) A Jig for EDID Download
- (3) Cable : Serial(9Pin or USB) to D-sub 15Pin cable, D-sub 15Pin cable, DVI to HDMI cable.



7-3. Connection Structure



<Fig. 3> Connection Diagram of DDC Download

Caution: Never connect HDMI & D-SUB Cable at the same time.

7-4. EDID Data

No	Item	Condition	Hex Data
1	Manufacturer	GSM	1E6D
2	Version	Digital : 1	01
3	Revision	Digital : 3	03

○ XGA EDID DATA
<Analog : 128bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	[X]					[X]
0010	[X]	01	03	08	45	27	78	EA	D9	00	A3	57	49	9C	25	
0020	11	49	4B	A1	08	00	01	01	45	40	81	40	01	01	01	01
0030	01	01	01	01	01	01										[1]
0040																[2]
0050												00	00	00	FD	00 3B
0060	45	1F	4A	10	00	0A	20	20	20	20	20	20	20			[4]
0070															00	[X]

<HDMI 1 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	[X]	[X]				
0010	[X]		01	03	80	48	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	01	01	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01										
0040																
0050																
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20				
0070																
0080	02	03	26	F1	50	02	03	84	05	07	10	11	12	13	14	15
0090	1F	20	21	22	01	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	10	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	ED	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[X]

<HDMI 2 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	[X]	[X]				
0010	[X]		01	03	80	48	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	01	01	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01										
0040																
0050																
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20				
0070																
0080	02	03	26	F1	50	02	03	84	05	07	10	11	12	13	14	15
0090	1F	20	21	22	01	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	20	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	ED	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[X]

<HDMI 3 : 256bytes>

Addr	00	01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F
0000	00	FF	FF	FF	FF	FF	FF	00	1E	6D	[X]	[X]				
0010	[X]		01	03	80	48	27	78	EA	D9	B0	A3	57	49	9C	25
0020	11	49	4B	A1	08	00	01	01	45	40	61	40	01	01	01	01
0030	01	01	01	01	01	01										
0040																
0050																
0060	46	1F	4A	10	00	0A	20	20	20	20	20	20				
0070																
0080	02	03	26	F1	50	02	03	84	05	07	10	11	12	13	14	15
0090	1F	20	21	22	01	23	09	07	07	83	01	00	00	68	03	0C
00A0	00	30	00	B8	2D	00	01	1D	00	80	51	D0	1C	20	40	80
00B0	35	00	BC	88	21	00	00	1E	8C	0A	D0	8A	20	ED	2D	10
00C0	10	3E	96	00	13	8E	21	00	00	18	00	00	00	00	00	00
00D0	00	00	00	00	00	00	00	00	00	00	00	00	01	1D	80	18
00E0	71	1C	16	20	58	2C	25	00	C4	8E	21	00	00	9E	00	00
00F0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	[X]

o Detail EDID Options are below (, , , ,)

Model Name	Product ID		
	DEC	Hex	EDID table
42PG100R-ZA	40275(A)	9D53	539D
	40276(D)	9D54	549D

Serial No

=> Controlled on production line

Month, Year

=> Controlled on production line:

ex) Monthly: '11' -> '0B'

Year: '2007' -> '11'

Model Name(Hex)

MODEL NAME	Model Name(HEX)															
LGTV	00	00	00	FC	00	4C	47	20	54	56	0A	20	20	20	20	20

Checksum

=> Changeable by total EDID data

* Ananlog(128Byte)

1)

	(HEX)															
50/60inch Model	1B	21	50	A0	51	00	1E	30	48	88	35	00	BC	88	21	00
42inch Model	64	19	00	30	41	00	1E	30	30	68	34	00	BC	88	21	00
FULL HD Model	46	37	80	7D	72	38	22	40	7D	C8	35	00	08	44	21	00

2)

	(HEX)															
50/60inch Model	0E	1F	00	80	51	00	1E	30	40	80	37	00	BC	88	21	00
42inch Model	A0	0F	20	00	31	58	1C	20	28	80	11	00	BC	39	20	00
FULL HD Model	1B	21	50	A0	51	00	1E	30	48	88	35	00	BC	88	21	00

*HDMI 1/2/3 (256Byte)

1)

	(HEX)															
50/60inch Model	1B	21	50	A0	51	00	1E	30	48	88	35	00	BC	88	21	00
42inch Model	A0	0F	20	00	31	58	1C	20	28	80	11	00	BC	39	20	00
FULL HD Model	46	37	80	7D	72	38	22	40	7D	C8	35	00	08	44	21	00

A

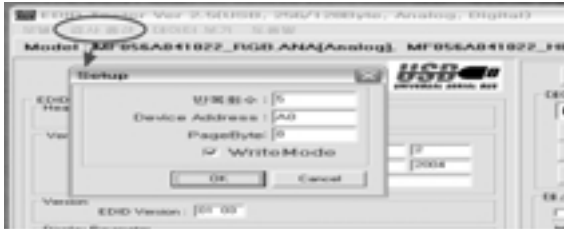
	(HEX)
FULL HD Model	81 80
XGA/WXGA	01 01

B

	(HEX)
FULL HD Model	1B 21
XGA/WXGA	01 01

7-5. Preparation for Adjustment

- (1) As above Fig. 3, Connect the Set, EDID Download Jig., PC & Cable
- (2) Turn on the PC & EDID Download Jig. And Execute the S/W : EDID TESTER Ver.2.5
- (3) Set up the S/W option
Repeat Number : 5
Device Address : A0
PageByte : 8



- (4) Power on the Set

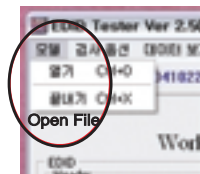
1) Sequence of Adjustment

1. DDC data of Analog-RGB

- (1) Init the data

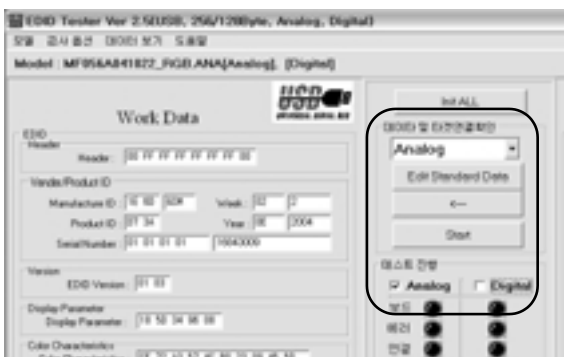


- (2) Load the EDID data.(Open File).

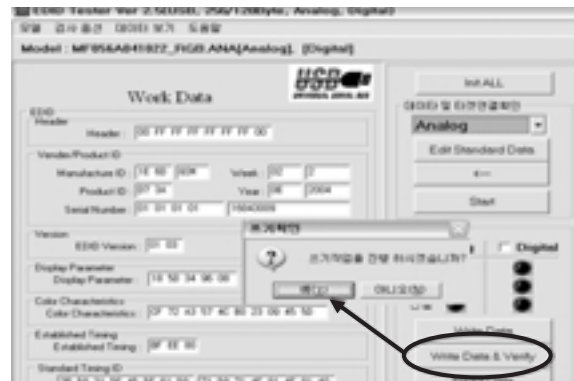


[Analog - RGB : PP81A_RGB.ANA]
[Digital - HDMI1 : PP81A_HDMI1.DVI]
[Digital - HDMI2 : PP81A_HDMI2.DVI]
[Digital - HDMI3 : PP81A_HDMI3.DVI]

- (3) Set the S/W as below.



- (4) Push the "Write Data & Verify" button. And confirm "Yes".



- (5) If the writing is finished, you will see the "OK" message.



8. HDCP (High-Bandwidth Digital Contents Protection)

- (1) Connect D-sub Signal Cable to D-Sub Jack
- (2) Input HDCP key with HDCP-key- in-program
- (3) HDCP Key value is stored on Main M-STAR IC(LGE6891DD) which is 0x80~0x90 addresses of 0x00~0x01 page(EEPROM MAP PAGE0~PAGE1 / START :A080)
- (4) Play the Equipment(DVD Player) included HDCP Key and confirm whether picture is displayed or not of using DVD Player.
- (5) HDCP Key value is different among the sets

9. Adjustment of White Balance

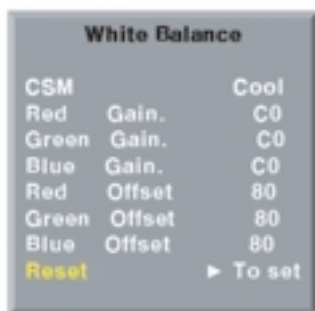
9-1. Purpose and Principle for Adjustment of the Color Temperature

- (1) Purpose: Adjust the color temperature to reduce the deviation of the module color temperature.
- (2) Principle : To adjust the white balance without the saturation, Fix the one of R/G/B gain to C0 and decrease the others.
- (3) Adjustment mode: Two modes of Cool and Warm
(Cool data is automatically calibrated by the Medium data)

9-2. Required Equipment

- (1) Remote controller for adjustment
- (2) Color Analyzer : CA-100+ or CA-210 or same product
- PLASMA TV(ch : 10)
- (3) Auto W/B adjustment instrument(only for Auto adjustment)
- Do the white balance adjustment under the 10LUX
- [Notice: When using the Color Analyzer with PDP, recommend the CA-100 more than CA-210.
If CA-100 can not available, it is also good to use the CA-210.
- (4) PC (for communication through RGB)
- (5) Pattern Generator (MSPG-925FA etc.)
-Before white balance, press the ADJ key 2times and do the reset like Fig. 4
-To enter White-balance mode, press the ADJ key 2times.

[Caution: System control Host should be "DDC" for adjustment.



<Fig. 4>

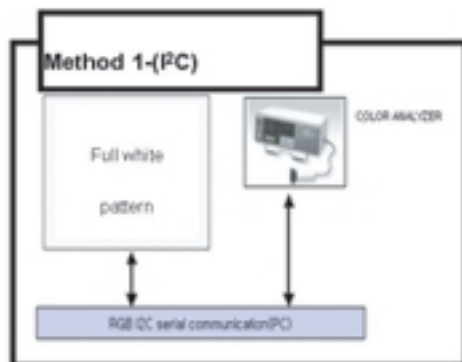
- (1) Enter the adjustment mode of the white balance
 - Enter the white balance adjustment mode at the same time heat-run mode when pushing the power on by power only key
 - Maintain the white balance adjustment mode with same condition of Heat-run
 - Maintain after AC off/on in status of Heat-run pattern display
- (2) Release the white balance adjustment mode
 - Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
 - Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment)
- (3) Enter the adjust mode of white balance
 - Enter the white balance adjustment mode with aging command(F3, 00, FF)
- o Color Temperature & Color Coordinates Setting
 - When adjusting the Color Temperature, Color Analyzer CA-210(Matrix should be corrected through CH10 of CS-1000) should be used. When CA-210 have used, it don't need to fit the CH10.
 - Adjust the Color Temperature based below adjustment color coordinates.
- o Target Value CA-210(PDP : CH10), CA-100(PDP)
(Standard color coordinate and temperature when using the CA-100+ or CA210 equipment)

Mode	Color Coordinate		Temp	Δuv
	x	y		
MEDIUM	0.285±0.002	0.293±0.002	9,300K	0.000
WARM	0.313±0.002	0.329±0.002	6,500K	0.003

- o Synchronization relation between PSM and CSM

PSM	CSM	Remark
Vivid	Cool	
Mild	Warm	

9-3. Connecting Diagram of Equipment for Measuring (For Automatic Adjustment)



○ DDC Adjustment Command Set

No	Adjustment content	CMD (HEX)	ADR	VALUE	Detail
1	Aging On/Off	F3	00	FF/00	00 : OFF 01 : ON FF : WB Ready
2	input select	F4	00		0x10 : TV 0x20 : AV1 0x21 : AV2 0x23 : AV3 0x40 : Component1 0x41 : Component2 0x60 : RGB PC 0x90 : HDMI1 0x91 : HDMI2 0x92 : HDMI3
3	R GAIN	16	00	00 - FE	GAIN Adjstment CSM COOL
4	G GAIN	18		00 - FE	
5	B GAIN	1A		00 - FE	
6	R GAIN	16	01	00 - FE	GAIN Adjstment CSM MEDIUM
	G GAIN	18		00 - FE	
	B GAIN	1A		00 - FE	
	R GAIN	16	02	00 - FE	GAIN Adjstment CSM WARM
	G GAIN	18		00 - FE	
	B GAIN	1A		00 - FE	
	CSM modo	F2	00	00	COOL
				01	MEDIUM
				02	WARM
	EEPROM Read	E7	00	00	EEPROM read
	EEPROM Write	E8	00	data	EEPROM write

[R/G/B GAIN max value : C0

9-4. Adjustment of White Balance for Manual Adjustment

Adjustment mode: Two modes of Medium(Vivid) and Warm (Cool data is automatically calibrated by the Medium data)

- Equipment : 1) Color analyzer(CA100+, CA210) should be used in the calibrated ch by CS-1000(.LCD : CH9, PDP : CH10)
2) Adjustment remocon

- For manual adjustment, it is also possible by the following sequence.
Operate the zero-calibration of the CA-100+ or CA-210, then stick sensor to the module when adjusting.

- (1) Select white pattern of heat-run by pressing "POWER ON" key on remote control for adjustment then operate heat run longer than 15 minutes. (recommend)
(If not executed this step, the condition for W/B will be different)
- (2) Changing to the AV mode by remote control.(Push front-AV)
- (3) Input external pattern(85% white pattern).
- (4) Stick sensor to center of the screen and select each items (Red/Green/Blue Gain and Offset) using \square/ϵ (CH +/-) key on R/C..
- (5) Adjust R/ G/B Gain using F/G (VOL +/-) key on R/C.
- (6) Adjust two modes of Medium(Vivid) and Warm as below figure.
(Fix the one of R/G/B and change the others)
1) Default : Medium(Vivid)
2) Push the "VOL +" key twice : Warm

Mode	Color Coordinate		Temp	Δuv
	x	y		
MEDIUM	0.285±0.002	0.293±0.002	9,300K	0.000
WARM	0.313±0.002	0.329±0.002	6,500K	0.003

[Refer to the below case to know what value is fixed.

[CASE]

First adjust the coordinate much away from the target value(x, y).

1. $x, y > \text{target}$
1) Decrease the R, G.
2. $x, y < \text{target}$
1) First decrease the B gain,
2) Decrease the one of the others.
- In case of decreasing the x, decreasing the R : fix G
- In case of decreasing the y , decreasing the G : fix R
3. $x > \text{target} , y < \text{target}$
1) First decrease B, so make y a little more than the target.
2) Adjust x value by decreasing the R
4. $x < \text{target} , y > \text{target}$
1) First decrease B, so make x a little more than the target.
2) Adjust x value by decreasing the G
- (7) When adjustment is completed, Exit adjustment mode using EXIT key on R/C.

10. Default Value in Adjustment

10-1. White Balance

(Default values maybe modified the module condition)

White Balance		
RED	Gain	C0
Green	Gain	C0
Blue	Gain	C0
Red	Offset	80
Green	Offset	80
Blue	Offset	80

10-2. Press CH write condition

- (1) AC on tilme on only one after assembled automatically
- (2) CH recover SVC OSD manually

System Control	
System	0
OverScan	2
AGC-L	1
Audio Delay	4
Baud Rate	0
Navigation Key	1
TV-LINK-TUNER	0
FACTORY-MODE	0
Host	1
Set Game Color	0
Channel Recover	▶
2Hour OFF	0
India Option	0
Ext Sound Mute	0
Sound IC Volum	30

11. Internal press test

Item	Value	Unit	Remark
Dielectric Voltage (AC <-> FG)	1.5	kV	At 100mA for 1sec (Line)
	1.5		At 100mA for 1min (OQC)
Dielectric Voltage (Without FG)	3	kV	At 100mA for 1sec (Line)
	3		At 100mA for 1min (OQC)

12. Sound spec.

Item	Min	Typ	Max	Unit	Remark
Audio Practical Max Output, L(Mono)/R	9	10	12	W	
Audio Practical Max Output, L(Mono)/R	13	15	17	W	42/50PG21-TA, 42/50PG61UR-TA Support 15W Sound output (6Ohm)

Caution: Each PCB assembly must be checked by check JIG set.
(Because power PCB Assembly damages to PDP Module, especially be careful)

13. POWER PCB Assy Voltage Adjustment(Va, Vs voltage Adjustment)

13-1. Test Equipment: D.M.M 1EA

13-2. Connection Diagram for Measuring

Refer to Fig. 5

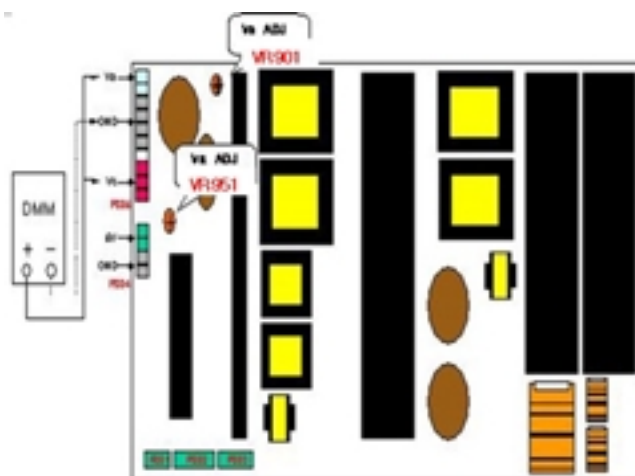
13-3. Adjustment Method

(1) Va Adjustment

- 1) After receiving 100% Full White Pattern, HEAT RUN.
- 2) Connect + terminal of D. M..M. to Va pin of P812, connect -terminal to GND pin of P812.
- 3) After turning VR901, voltage of D.M.M adjustment as same as Va voltage which on label of panel right/top (deviation; $\pm 0.5V$)

(2) Vs Adjustment

- 1) Connect + terminal of D. M..M. to Vs pin of P812, connect -terminal to GND pin of P812.
- 2) After turning VR951 401, voltage of D.M.M adjustment as same as Vs voltage which on label of panel right/top (deviation ; $\pm 0.5V$)



<Fig. 5> Connection Diagram of Power Adjustment for Measuring

14. Preset CH Information

14-1. Analog CH synthesis Table_Ver_1_0

Storage	Factory	System		Band	CH	CH Name	Freq(Mhz)	Freq / 50Khz
1	Initial CH (Gumi)	PAL	BG	V/UHF	NZ01	C 01	45.25	905
2		SECAM	DK	V/UHF	R34	C 34	575.25	11505
3		PAL	BG	V/UHF	EU05	C 05	175.25	3505
4		PAL	I	Cable	PI11	S 11	231.25	4625
5		NTSC		V/UHF	BR48		675.25	
6		PAL	BG	V/UHF	E04	C 04	62.25	1245
7		PAL	BG	V/UHF	EU07	C 07	189.25	3785
8		PAL	BG	V/UHF	EU50	C 50	703.25	14065
9		PAL	BG	V/UHF	EU52	C 52	719.25	14385
10		PAL	I	V/UHF	PI41	C 41	631.25	12625
11		PAL	I	V/UHF	PI63	C 63	807.25	16145
12		PAL	BG	Cable	5	S 47	102.25	2045
13		PAL	BG	V/UHF	21	C 21	471.25	9425
14		SECAM	L	V/UHF	SLB	C 02	55.75	1115
15		SECAM	L	Cable	CATVE	S 07	152.75	3055
16		SECAM	L	V/UHF	SL36	C 36	591.25	11825
17								
18	MA (WR)	PAL	B	V/UHF	E5	C 05	175.25	3505
19		PAL	G	V/UHF	E51	C 51	711.25	14225
20		PAL	I	V/UHF	I41	C 41	631.25	12625
21		SECAM	D	V/UHF	R5	C 05	93.25	1865
22		PAL	B	V/UHF	E4	C 04	62.25	1245
23		PAL	G	V/UHF	E31	C 31	551.25	11025
24		PAL	I	V/UHF	I21	C 21	471.25	9425
25		PAL	I	V/UHF	I69	C 69	855.25	17105
26		PAL	G	V/UHF	E48	C 48	687.25	13745
27		SECAM	L	V/UHF	L4	C 08	200.00	4000
28		SECAM	L	V/UHF	L45	C 45	663.25	13265
29		PAL	G	V/UHF	E25	C 25	503.25	10065
30		SECAM	D	V/UHF	R7	C 07	183.25	3665
31		SECAM	D	V/UHF	R7	C 07	189.25	
32								
33								
34	NT	NTSC	M	V/UHF	US-4	C 04	67.25	1345
35		NTSC	M	V/UHF	J-01	C 01	91.25	1825
36		NTSC	M	V/UHF	US-13(J-11)	C 13	211.25	4225
37		NTSC	M	V/UHF	US-14(J-13)	C 14	471.25	9425
38		NTSC	M	V/UHF	US-63(J62)	C 63	765.25	15305
39		NTSC	M	Cable	CATV-15	S 15	127.25	2545
40		NTSC	M	V/UHF	US-18(Digital)	C 18	497(Center Freq)	
41		SECAM	D/K	V/UHF	R-1(CIS)	C 01	49.75	995
42		PAL	D/K	V/UHF	D-10(China10)	C 10	200.25	4005
43		PAL	D/K	V/UHF	K-36	C 36	695.25	13905
44		PAL	B/G	V/UHF	E-5	C 05	175.25	3505
45		PAL	B/G	V/UHF	G-40	C 40	623.25	12465
46		PAL	I	V/UHF	I-28	C 28	527.25	10545

Storage	Factory	System		Band	CH	CH Name	Freq(Mhz)	Freq / 50Khz
47	NT_ PANDA	PAL	D/K	V/UHF	D-1	C 01	49.75	995
48		PAL	D/K	V/UHF	D-4	C 04	77.25	1545
49		PAL	D/K	V/UHF	D-10	C 10	200.25	4005
50		PAL	B/G	V/UHF	E-5	C 05	175.25	3505
51		SECAM	D/K	V/UHF	R-12	C 12	223.25	4465
52		NTSC	M	V/UHF	US-14	C 14	471.25	9425
53		SECAM	D/K	V/UHF	R-34	C 34	575.25	11505
54		PAL	I	V/UHF	I-41	C 41	631.25	12625
55		NTSC	M	V/UHF	US-63	C 63	765.25	15305
56								
57	RA	SECAM	B/G	V/UHF	E-04	C 04	62.25	1245
58		SECAM	D/K	V/UHF	R-05	C 05	93.25	1865
59		PAL	B/G	V/UHF	E-05	C 05	175.25	3505
60		SECAM	D/K	V/UHF	R-12	C 12	223.25	4465
61		PAL	B/G	V/UHF	E-21	C 21	471.25	9425
62		SECAM	D/K	V/UHF	R-34	C 34	575.25	11505
63		SECAM	D/K	V/UHF	R-54	C 54	735.25	14705
64								
65								
66	IN	PAL	B/G	V/UHF	E-2	C 02	48.25	965
67		PAL	B/G	V/UHF	E-5	C 05	175.25	3505
68		PAL	B/G	V/UHF	E-11	C 11	217.25	4345
69		PAL	B/G	V/UHF	E-25	C 25	503.25	10065
70		PAL	B/G	V/UHF	E-36	C 36	591.25	11825
71		PAL	I	V/UHF	I-30	C 30	543.25	10865
72		PAL	I	Cable	I-11	S 11	231.25	4625
73		SECAM	D/K	Cable	R-05	S 45	93.25	1865
74		SECAM	D/K	V/UHF	R-34	C 34	575.25	11505
75		SECAM	L	V/UHF	F-B	C 47	55.75	1115
76		NTSC	M	V/UHF	US-04	C 4	67.25	1345
77		PAL	N	V/UHF	N-10	C 10	193.25	3865
78		NTSC	M	V/UHF	US-11	C 11	199.25	3985
79		NTSC	M	V/UHF	US-13	C 13	211.25	4225
80		NTSC	M	V/UHF	US-30	C 30	567.25	11345
81		SECAM	L	V/UHF	F-49	C 49	695.25	13905
82		PAL	M	V/UHF	M-69	C 69	801.25	16025
83		JAPAN	M	Cable	JA-01	S-95	91.25	1825
84		JAPAN	M	V/UHF	JA-04	J 4	171.25	3425
85		JAPAN	M	V/UHF	JA-36	37	609.3	12186
86		PAL	B/G	Cable	Au-5	S-47	102.25	2045
87								
88								
89	NP	PAL	B/G	V/UHF	E-05	C 05	175.25	3505
90		NTSC	M	V/UHF	US-13	C 13	211.25	4225
91		SECAM	D/K	V/UHF	R-12	C 12	223.25	4465
92		PAL	D/K	V/UHF	D-01	C 01	49.75	995
93		SECAM	D/K	V/UHF	R-34	C 34	575.25	11505
94		PAL	B/G	V/UHF	E-21	C 21	471.25	9425
95		PAL	D/K	V/UHF	D-04	C 04	77.25	1545
96		PAL	D/K	V/UHF	D-10	C 10	200.25	4005

TROUBLE SHOOTING GUIDE

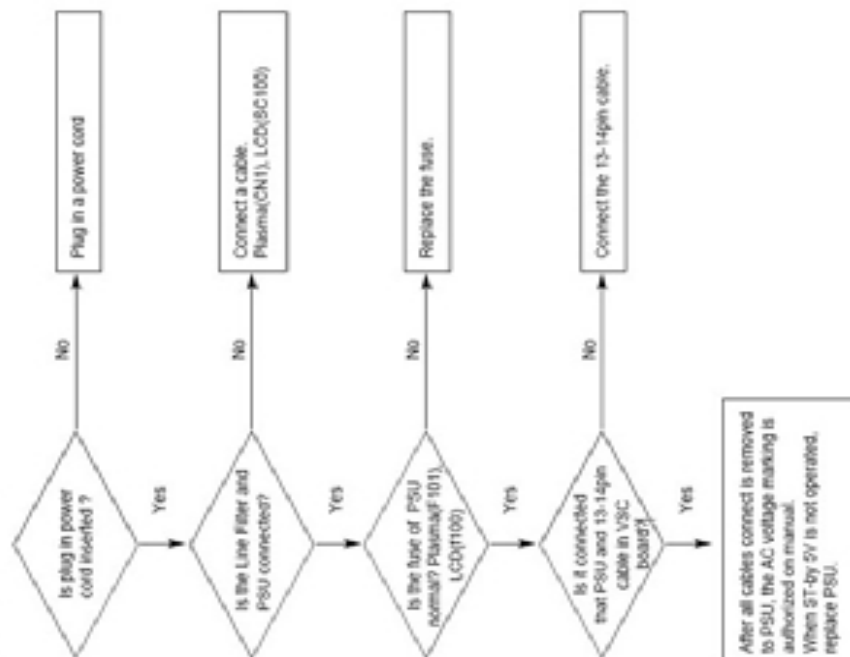


1. No power

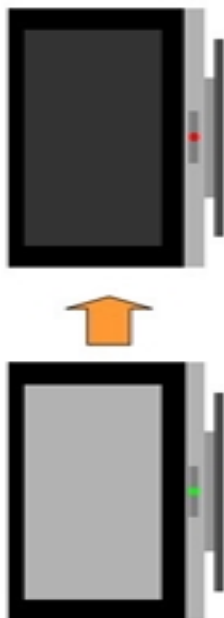
1) Symptom

- 1) It is not discharged minutely from the module.
- 2) Light does not come into the front LED.

2) Check process



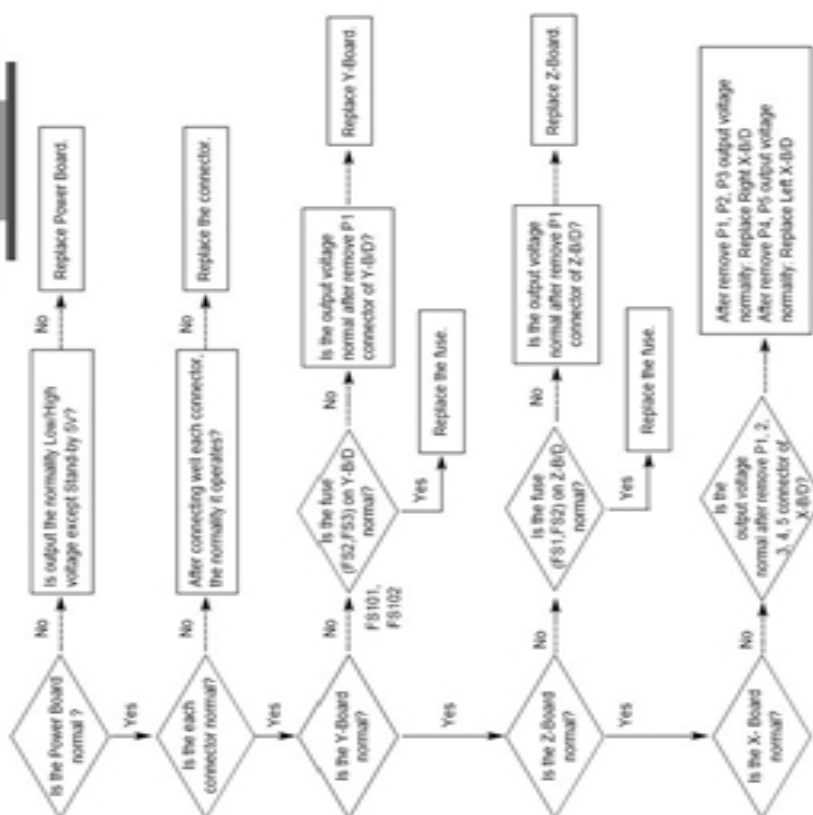
2. Protect mode(PDP Only)

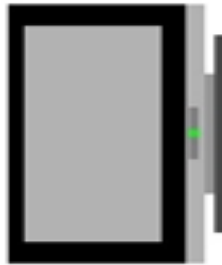


1) Symptom

- 1) After once shining, it does not discharge manually from module.
- 2) The relay falls.(The sound is audible "Click".)
- 3) It is converted with the color where the front LED is red from green.

2) Check process



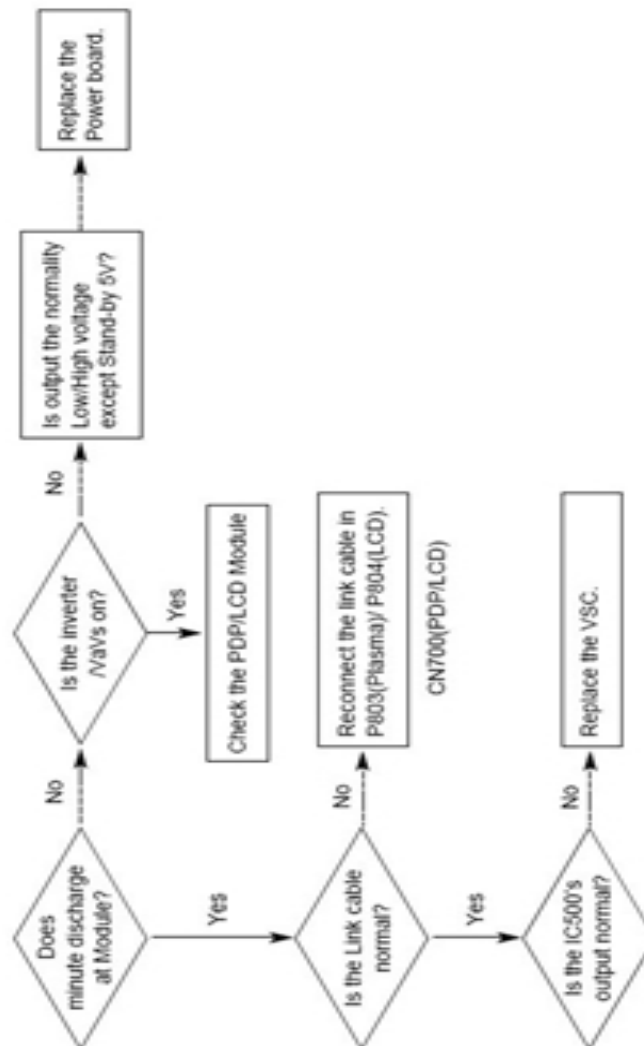


3. No Raster

1) Symptom

- 1) No OSD and image occur at screen.
- 2) It maintains the condition where the front LED is green.

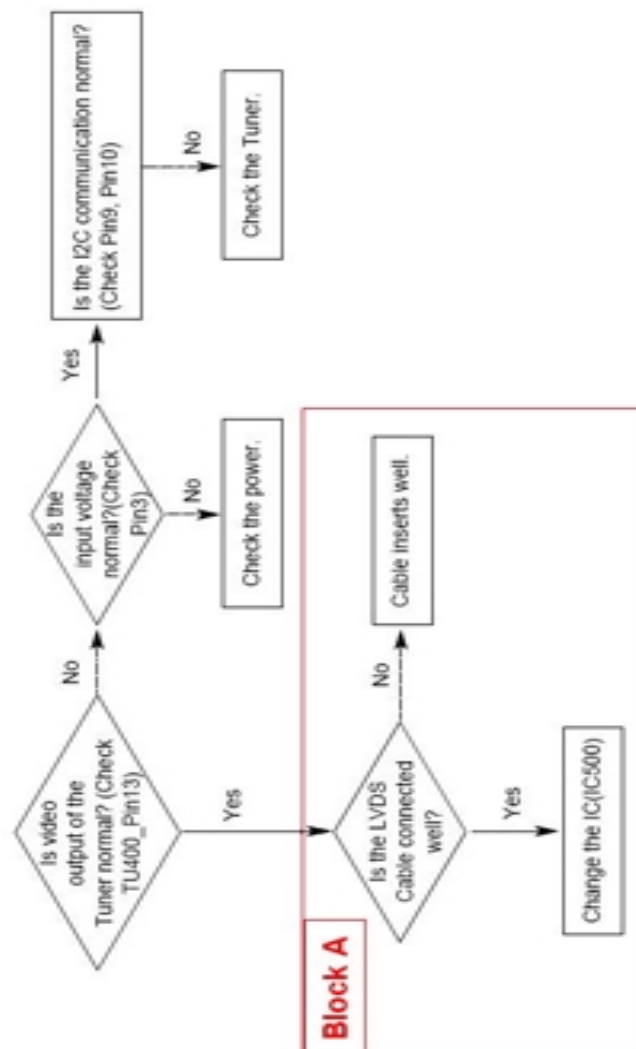
2) Check process



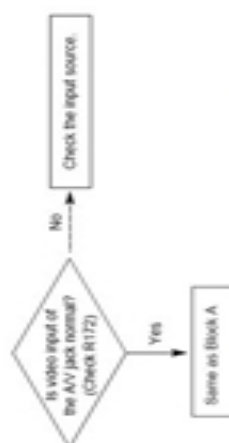


4. Unusual display from RF mode.

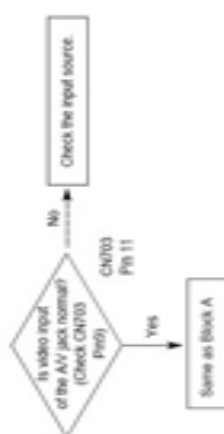
1) Check process



5. Unusual display from rear AV mode.



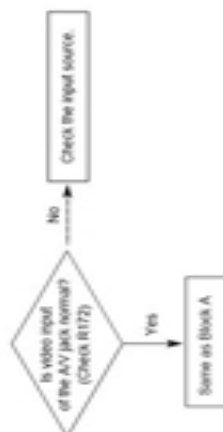
6. Unusual display from Side AV mode.



7. Unusual display from Side S-Video mode.



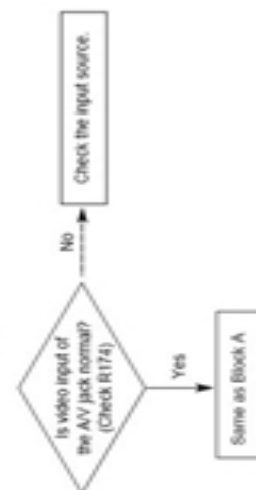
8. Unusual display from SCART 1 mode.



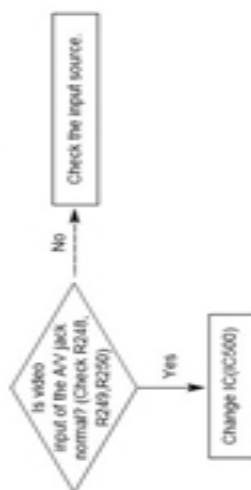
9. Unusual display from SCART 1_RGB mode.



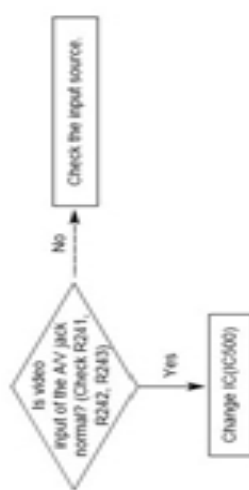
10. Unusual display from SCART 2 mode.



11. Unusual display from component 1 mode.



12. Unusual display from component 2 mode.



13. Unusual display from RGB mode.



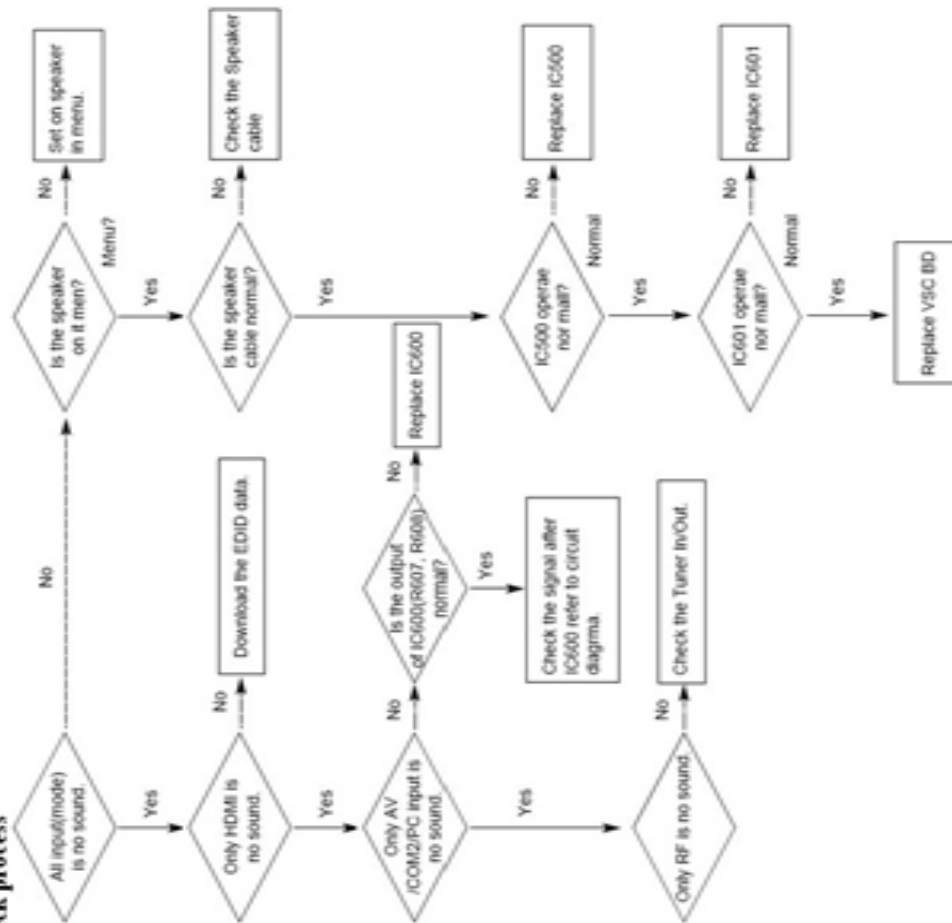
14. No Sound

1) Symptom

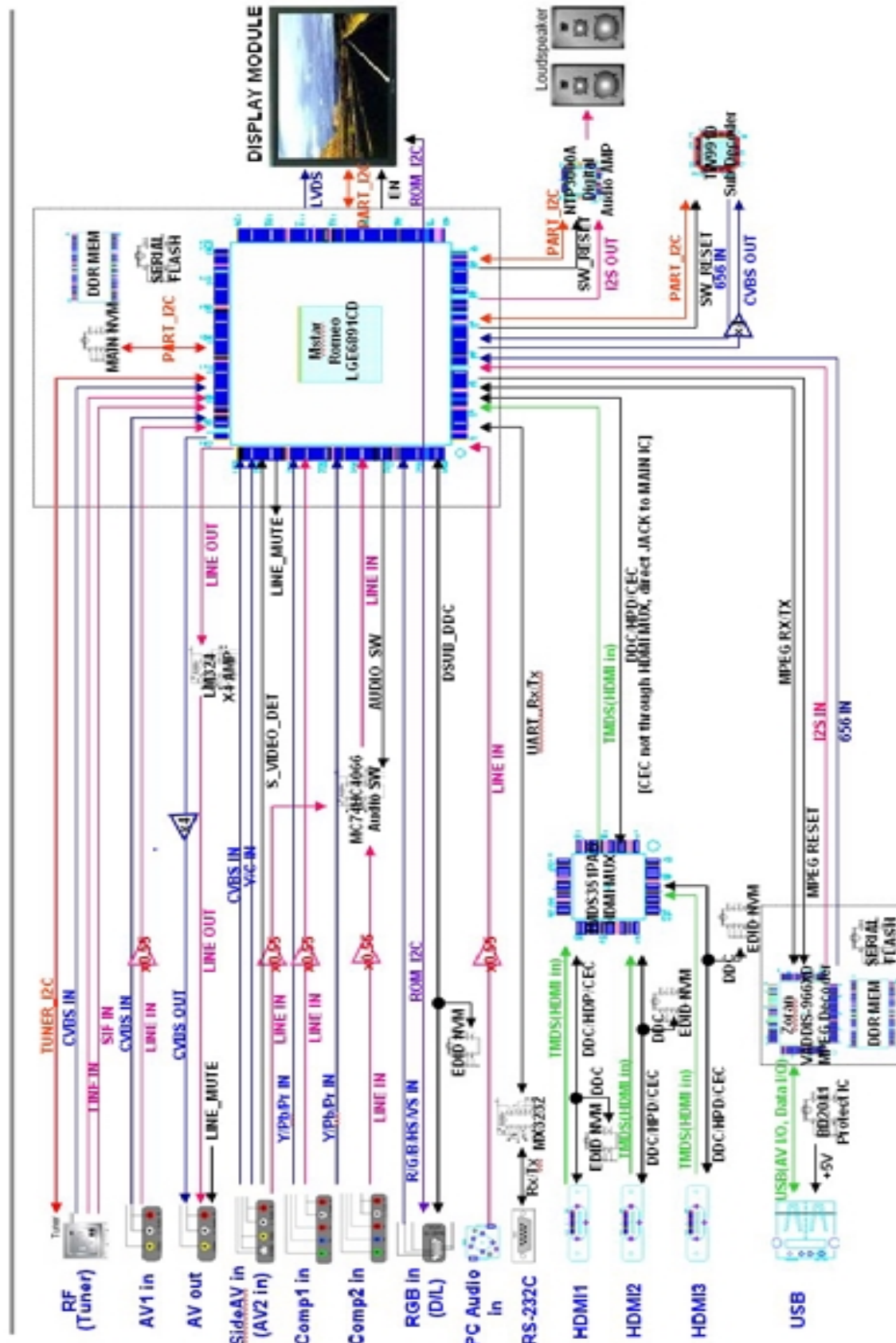
- 1) LED is green.
- 2) Screen display but sound is not output.



2) Check process



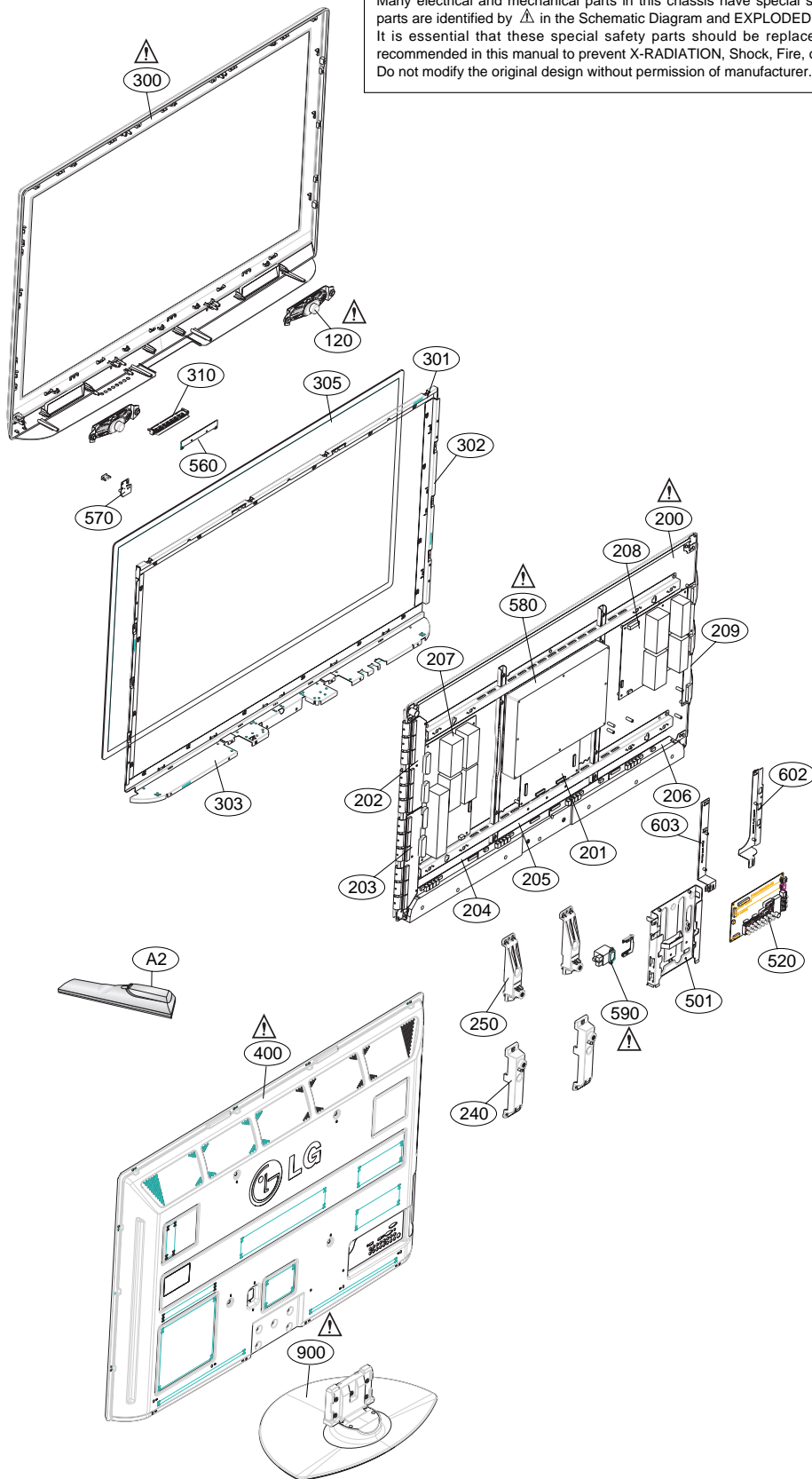
BLOCK DIAGRAM



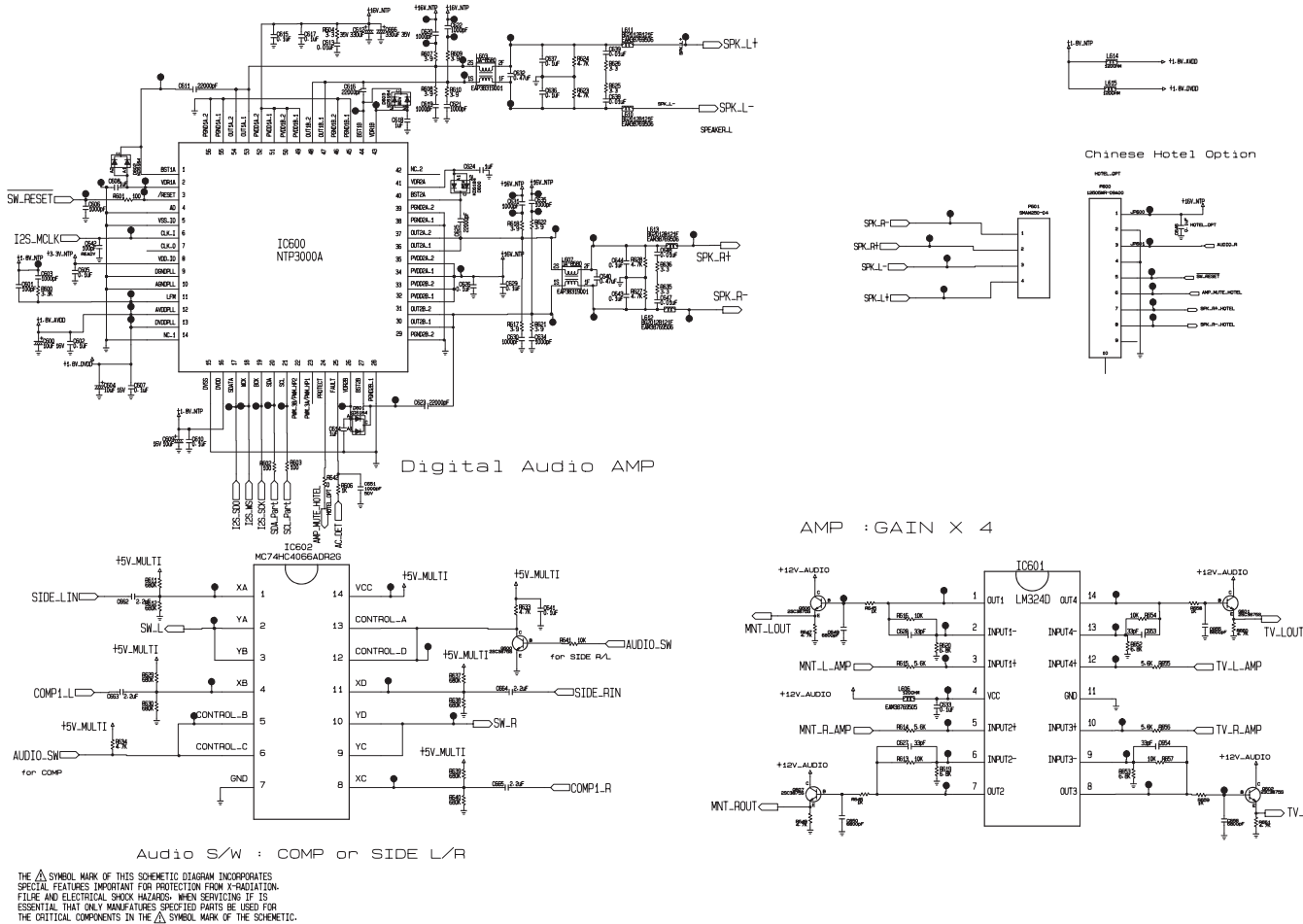
EXPLODED VIEW

IMPORTANT SAFETY NOTICE

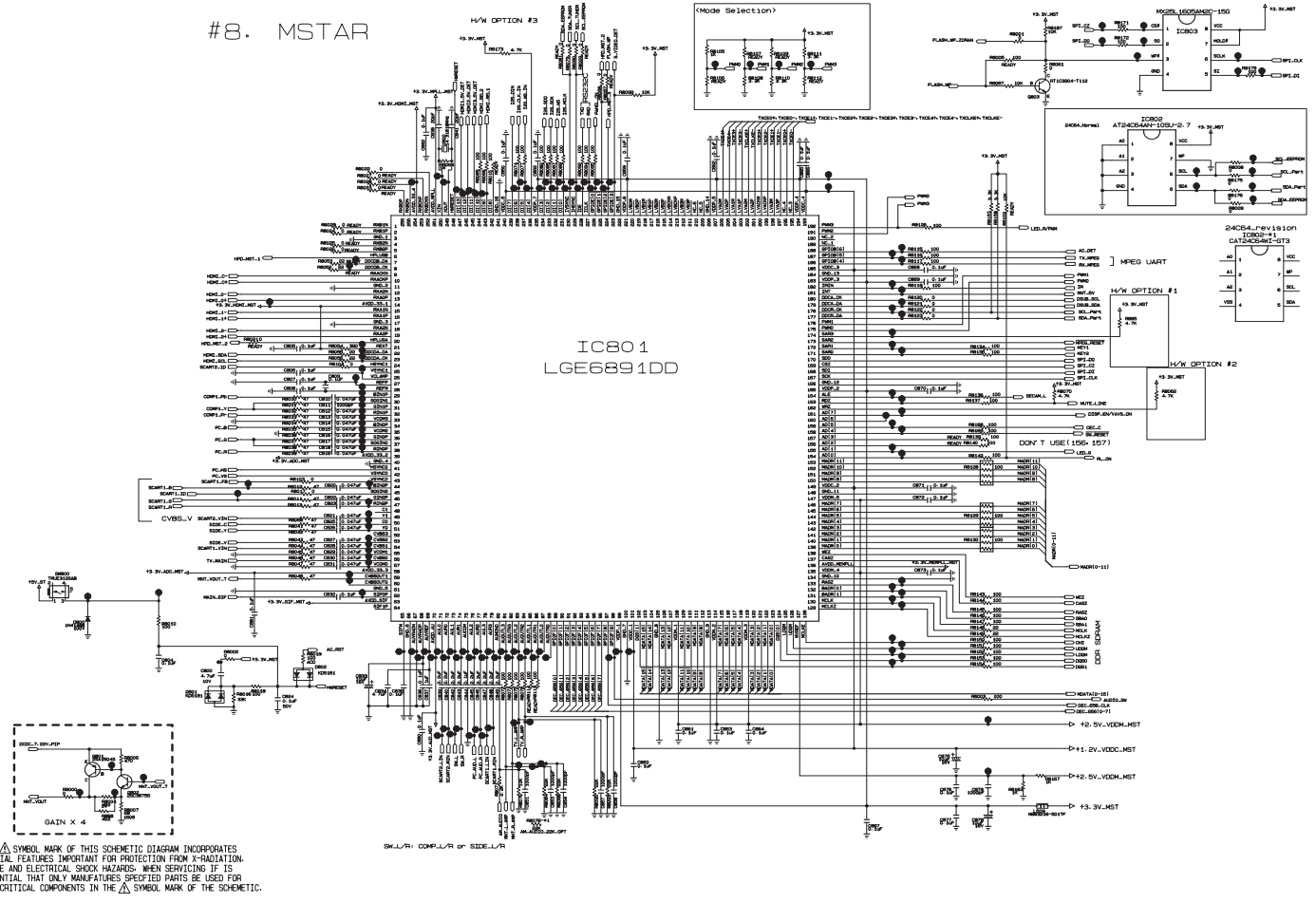
Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and EXPLODED VIEW. It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards. Do not modify the original design without permission of manufacturer.



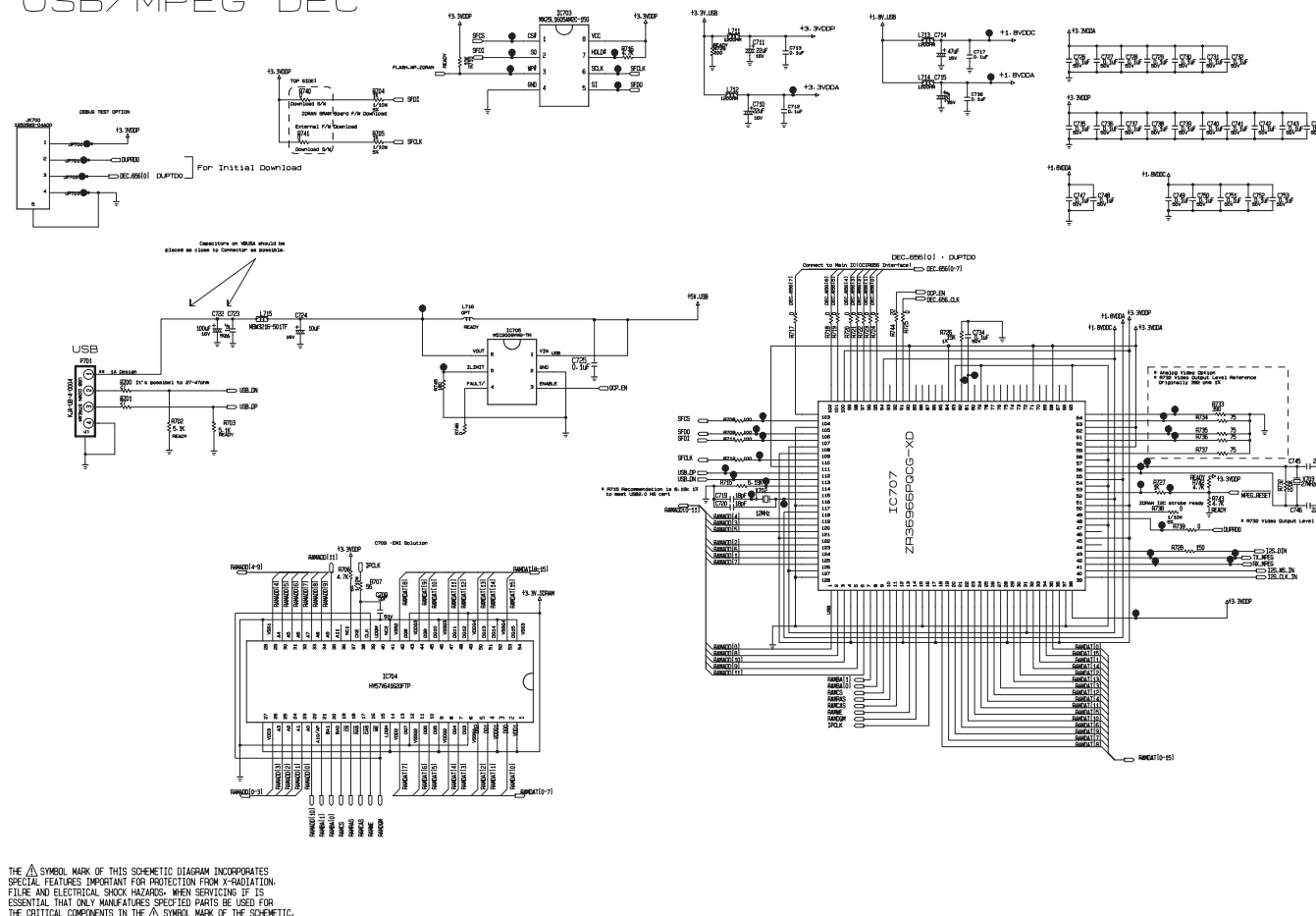
AUDIO



#8. MSTAR

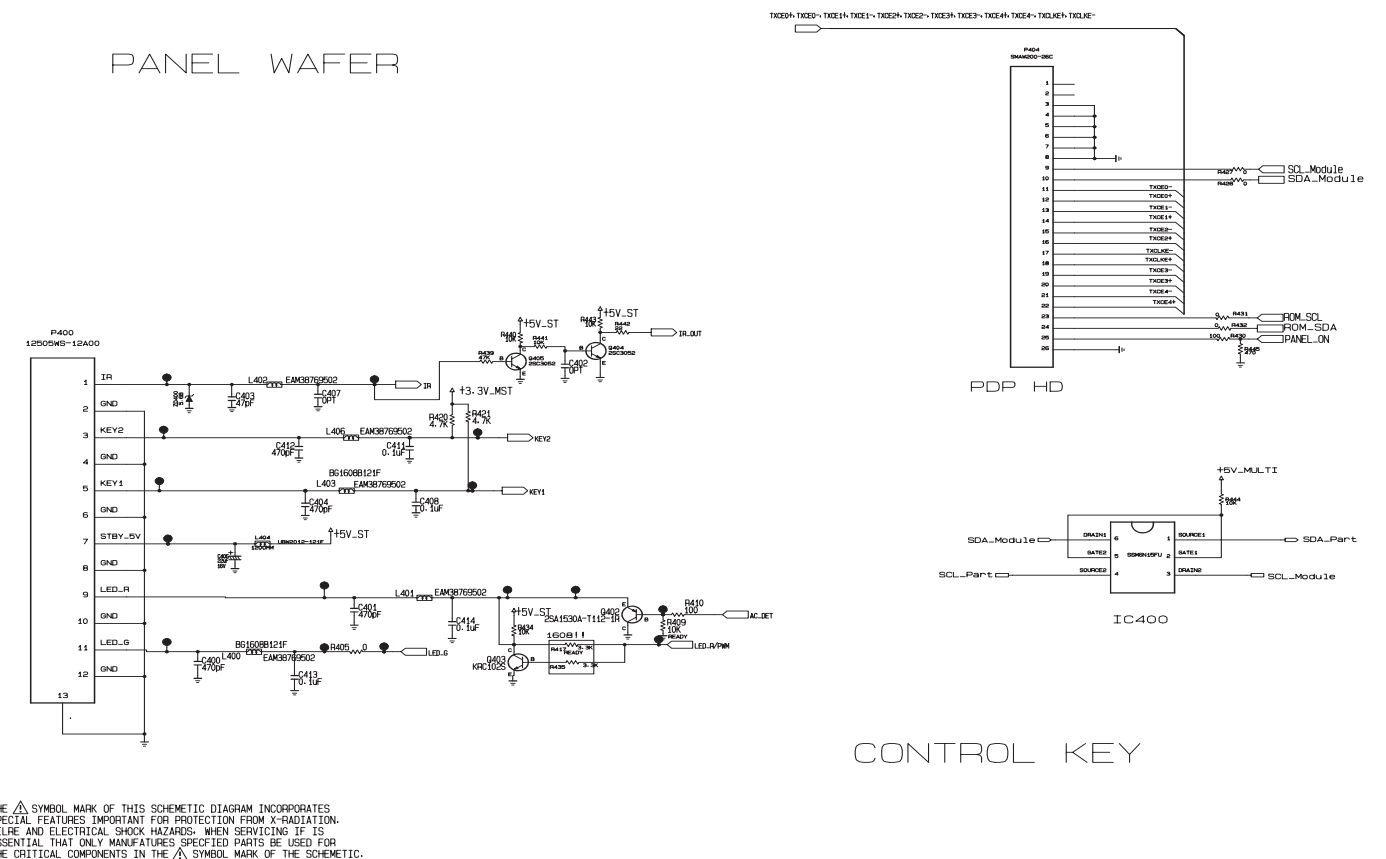


USB/MPEG DEC

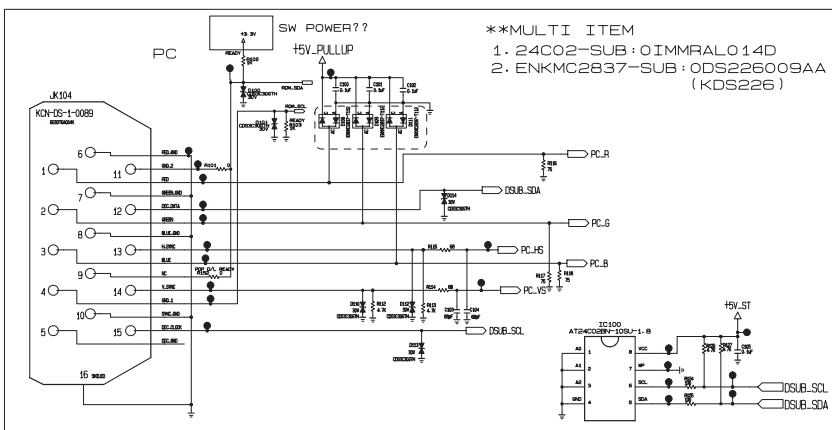
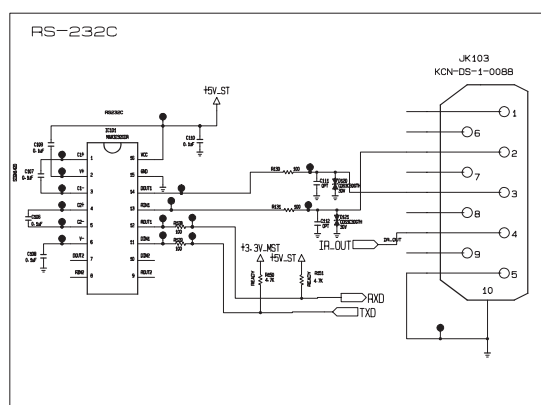


LVDS, CTR KEY

PANEL WAFER



CONTROL KEY



PC SOUND

J102
PE-024-01

3 E-SPRING

6A T-TERMINAL 1

7A B-TERMINAL 1

4 R-SPRING

5 S-SPRING

7B T-TERMINAL 2

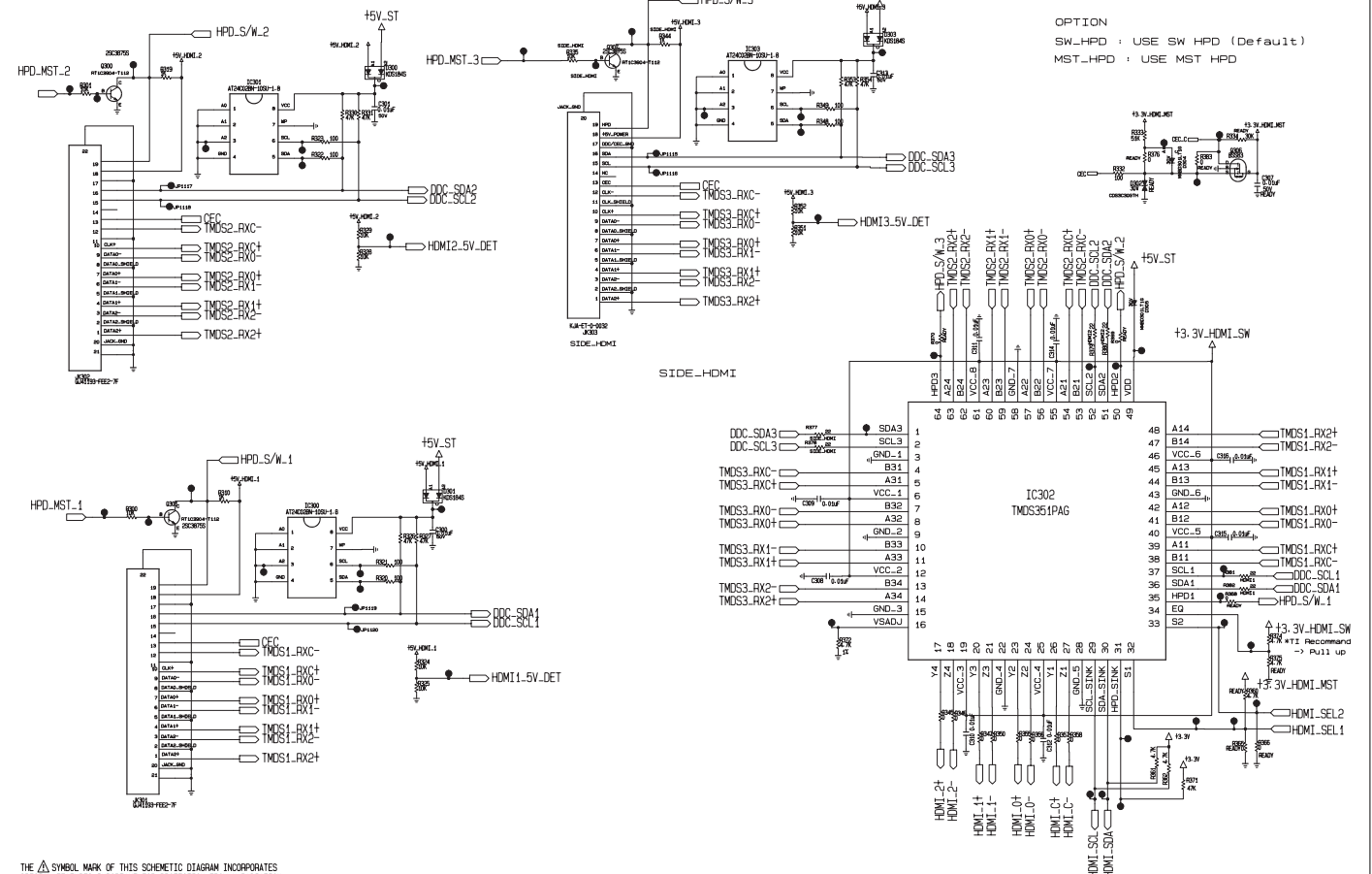
6B B-TERMINAL 2

8 SHIELD PLATE

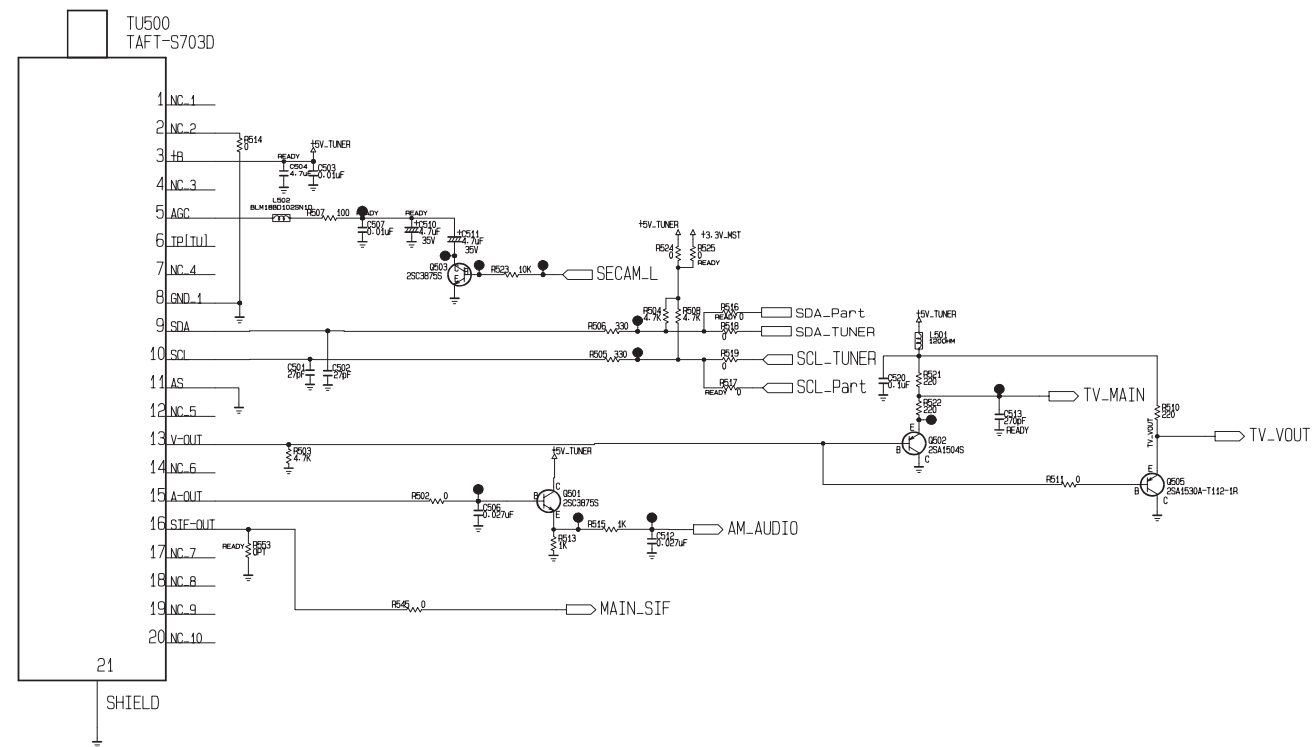
PC-AUD.L

PC-AUD.R

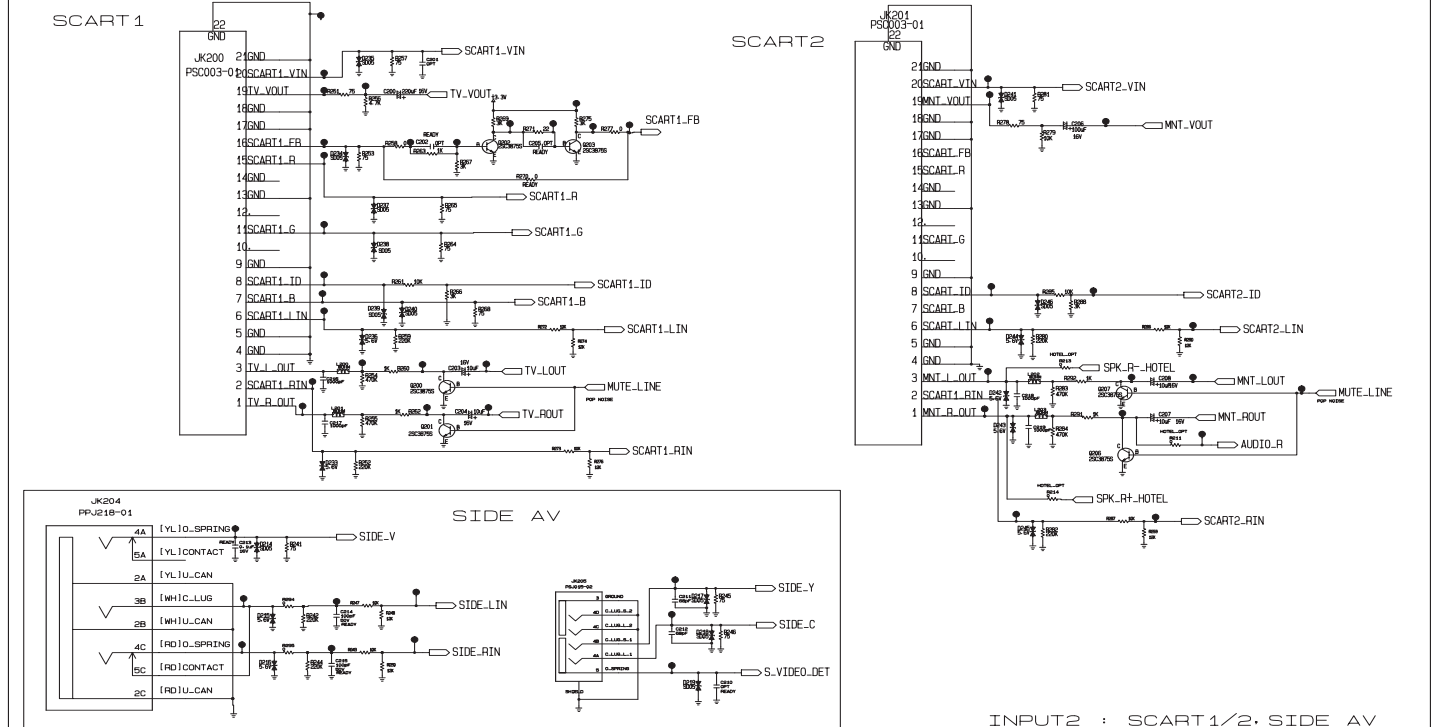
HDMI



TUNER



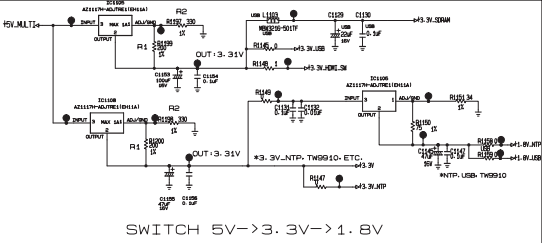
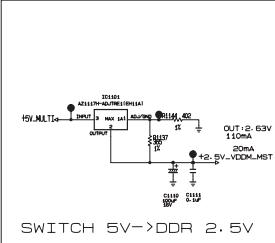
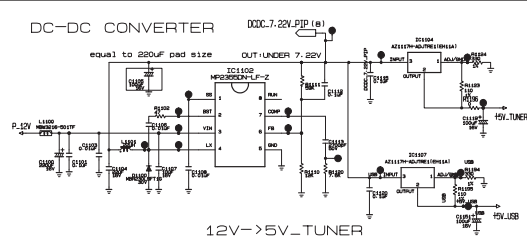
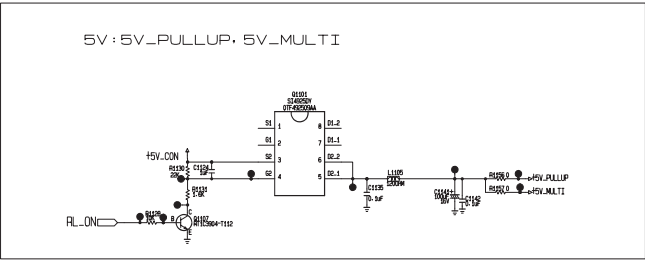
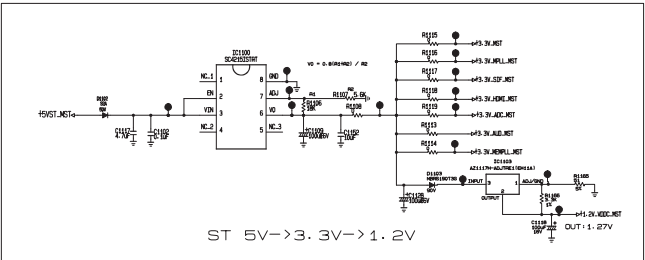
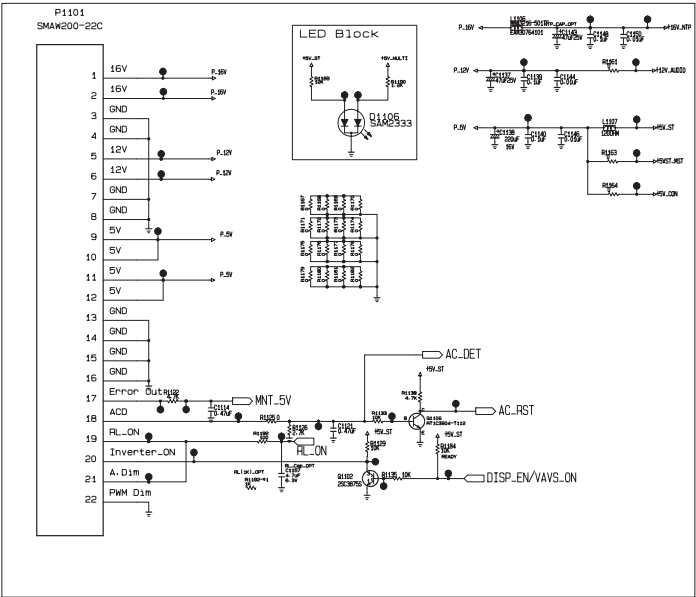
INPUT2





```
INPUT2  : SCART1/2. SIDE  AV
```

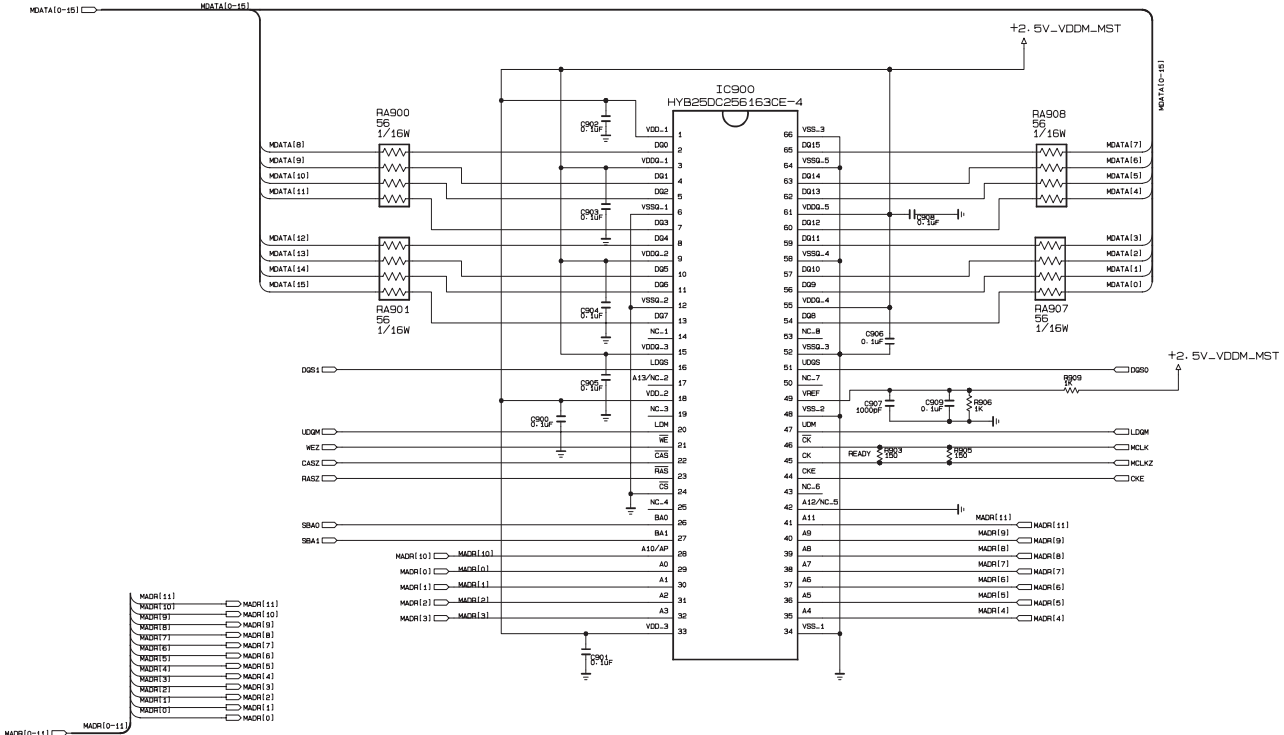
LGE Internal Use Only



POWER



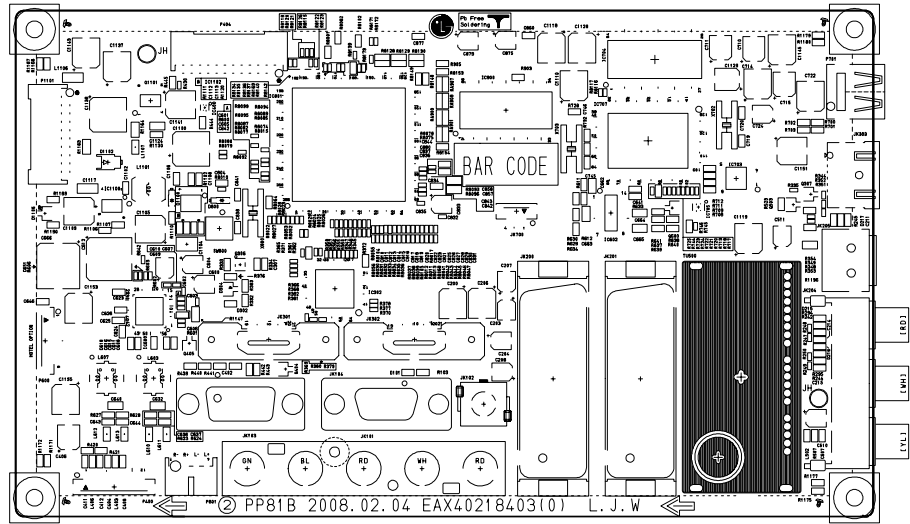
THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

#9. DDR

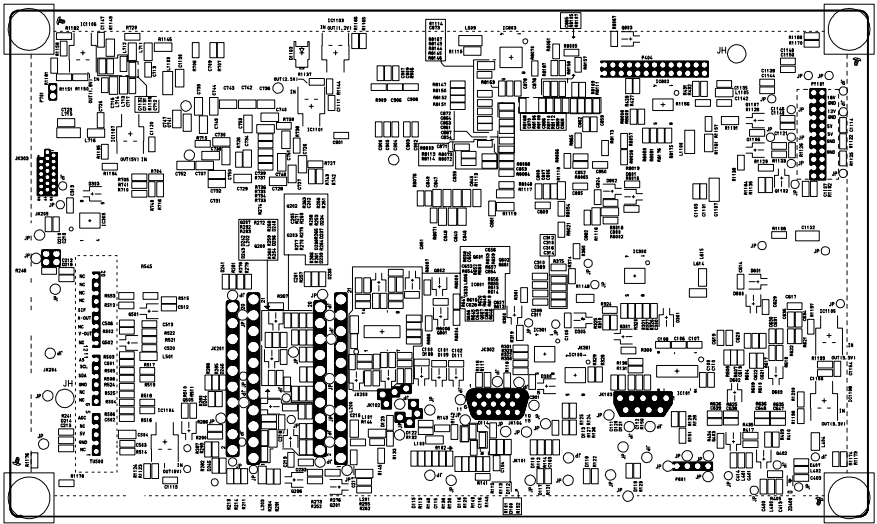


THE  SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE  SYMBOL MARK OF THE SCHEMATIC.

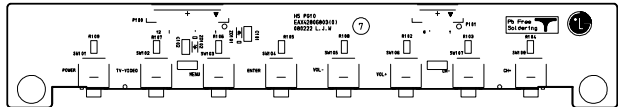
MAIN(TOP)



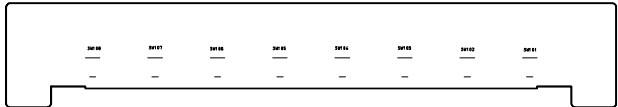
MAIN(BOTTOM)



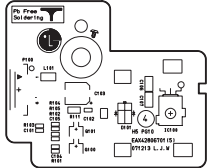
CONTROL(TOP)



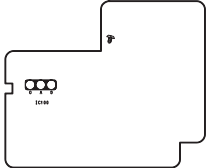
CONTROL(BOTTOM)



PRE-AMP(TOP)



PRE-AMP(BOTTOM)





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